DOCUMENT RESUME

ED 437 015 HE 032 717

AUTHOR Patterson, Norma J.H.
TITLE An Evaluation of Graduate Class Interaction in Face-to-Face and Asynchronous Computer Groupware Experiences: A Collective Case Study. ASHE Annual Meeting Paper.
PUB DATE 1999-11-00
NOTE 14p.; Paper presented at the Annual Meeting of the Association for the Study of Higher Education (24th, San Antonio, TX, November 18-21, 1999).
PUB TYPE Reports - Evaluative (142) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Active Learning; Case Studies; Computer Uses in Education; Confidence Testing; *Distance Education; Graduate Study; Higher Education; Independent Study; Nontraditional Education; *Student Evaluation; Student Participation; *Telecourses; Time on Task
IDENTIFIERS *ASHE Annual Meeting

ABSTRACT

Two graduate-level educational administration courses, one delivered by computer-mediated (distributed) means and one held face-to-face, were evaluated based upon the needs of adult learners and active learning precepts. The same course was delivered to both classes by the same group of professors, using identical course requirements. The on-campus class met once a week for three hours in the evening; eleven adult students and two or three professors attended each class. Distributed class sessions (using a Lotus notes platform) took place at the time of students' choosing throughout the week, with all assignments and exams conveyed through writing. The professors were all experienced in the subject matter and in teaching; two of the three had previously taught using the software. The survey revealed that the characteristics of students in both classes were more alike than different. The distributed education class had a slight edge on the final grades, with the strongest indicator of difference seeming to lie in the greater amount of confidence the students brought to the class. The study also notes that the distributed students who had previous experience in distance learning spent more time in class. (RH)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 437 015

Association for the Study of Higher Education (ASHE) Conference
24th Annual ASHE Conference

AN EVALUATION OF GRADUATE CLASS INTERACTION IN FACE-TO-FACE AND ASYNCHRONOUS COMPUTER GROUPWARE EXPERIENCES: A COLLECTIVE CASE STUDY

by

Norma J. H. Patterson

BEST COPY AVAILABLE

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

University of Nebraska
Lincoln, Nebraska USA
November 20, 1999

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY
V. Vaughn
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

HE 032 717

ASHE *Association for the Study of Higher Education*

Headquartered at the University of Missouri-Columbia • College of Education • Department of Educational Leadership and Policy Analysis • 211 Hill Hall, Columbia, MO 65211 • 573-882-9645 • fax 573-884-5714

This paper was presented at the annual meeting of the Association for the Study of Higher Education held in San Antonio, Texas, November 18-21, 1999. This paper was reviewed by ASHE and was judged to be of high quality and of interest to others concerned with higher education. It has therefore been selected to be included in the ERIC collection of ASHE conference papers.

AN EVALUATION OF GRADUATE CLASS INTERACTION IN FACE-TO-FACE AND ASYNCHRONOUS COMPUTER GROUPWARE EXPERIENCES: A COLLECTIVE CASE STUDY

Face-to-face

The topic is higher education and financing it. The discussion is lively with a mixture of shared experiences, a few quips by the three gray-haired administrators-turned-professors, and frequent quick bursts of laughter by the eleven students with a few side comments of their own. As the early evening class progresses within the bland beige walls of a soon-to-be remodeled 1920's brick building, student presentations of budget analyses in different models of higher education vary in their use of aids: handouts to computer-operated slide shows. Discussion centers on questions generated by the professors and a handful of students. The evening moves quickly from one group to the next, topics change frequently and dissipate into laughter or subjects far removed from the original topic. One introduction goes like this:
Male 1: "I wanted to apologize. I don't know if you all know why I'm late every week. It's because I teach a class; I can't not show up and in addition my class is a required course, so I rush here, speed here, break all the laws."
Male 2: "Then you got to find a place to park. "
Male 1: "Yeah, I got to find a place to park and then I'm late, and so I apologize."

Distributed

Another class, another topic. "What is the current situation of the GI BILL benefits?" asks a student responding to a written presentation. Discussing the same topics and reading the same materials, the class of eleven materializes not behind beige walls but on a computer screen. They too hold a lively discussion; however, this class may converse behind the faculty office, the cafeteria, or the classroom icons. Break occurs not just for a ten-minute interval between two hour-and-a-half sessions, but at any time convenient for the students. They too present on the same topics and in groups but their presentations are written materials, and instead of choppy questions with pauses and interruptions, the student audience ask completed thoughts. The professor interjects a few sentences of encouragement. "Nice job--five good selections, nicely written and referenced. Now let's see what other people select and then have a good d dialogue about them." One by one classmates offer their thoughts, sometimes in response to the original presentation or in response to another classmate's response. Their discussion, while more serious, also at times dwindles down to topics far removed from the original.

Context

Although the distance education explosion is permeating lifelong learning, and technology is invading the traditional classroom, ambivalence about the quality of a distance learning experience still lingers in the minds of educators and students. "[Distance education] is depreciated because it is considered to be merely a substitute for 'real' and that means face-to-face teaching, a surrogate, an emergency measure in situations in which no traditional way of learning is possible" (Peters, 1993, p. 17). While technology expands access to lifelong learning, college reputations also rest upon quality education. Therefore, evaluation of courses offered through various means of delivery ensures quality educational endeavors,

regardless of proximity of instructor to student. This research paper contributes to the growing documentation of quality education.

For this study, the same graduate level education administration course delivered to two different classes, via face-to-face and computer-mediated means, is evaluated based upon the needs of adult learners and active learning precepts. The same group of professors gave the classes an identical syllabus and course requirements and identical required reading materials. Evaluation criteria for the course was identical with 50% of the course grade generated from class participation.

The on-campus class met once a week for three hours in the early evening in a classroom with tables. Eleven students and two or three professors attended most classes. Any technology used for presentations had to be carted in for that session. Participation was based upon an oral discussion of the topics for the evening, requiring students to read materials prior to calcite. Topical investigations were group oral reports presented to a live audience of peers and professors. The term report and the final exam were written documents (although students were allowed to discuss take-home exam questions with peers prior to formulating individual essay answers.)

The distributed class held its sessions at the time of students' choosing throughout the week with all assignments and discussions conveyed through writing. Lotus Notes software was used, which created a workpage with icons representing various segments of class life. The class meeting icon threaded all discussion so that students could track who was replying to whose comment or topic question. The software was shipped to students prior to the first week of class to download to their computers and return. Students then "replicated" or received up-to-the-minute reports from faculty and other class members and sent their own responses via their Internet connection to a server located in the education administration department.

The three professors in charge of both classes were former college administrators ranging from community college president to vice president of finance at the university. All had extensive experience in postsecondary finance and were experienced teachers of educational administration. Two of the three professors had previously taught classes via the Lotus Notes platform.

Theoretical Background

Distance Learning Theory

Computer-mediated learning attempts to promote the interactivity of the face-to-face classroom experience, incorporating interactivity on the learner's part at three levels: content, instructor, and other students (Moore, 1993). Harasim (1989) has created a model delineating differences in instructional method, setting, technology-mediation, and interactivity among modes of delivery. How students described the learning experience of these different components of the model constituted the underlying issues driving this study.

Andragogy

The state university graduate classes in this study were comprised of adult learners throughout the world. The methodology of the study was predicated upon Knowles' (1990) model for adult learning, which states that adult learning is based upon:

a) reason
b) self-concept of the learner
c) learner's experiences
d) readiness to learn

e) orientation to learning — life centered versus pedagogically subject centered. Adults see the teacher as facilitator (Knowles, 1980), as a peer in the learning process. Adults consider learning a life-long process rather than a subject confined to the parameters of a classroom.

Busby (1997) identified five common principles for adult distance learners:

1) the learning must be relevant to the learners;
2) the learners must be motivated to learn;
3) the instruction must incorporate varied strategies that tap into the learners' experience base;
4) the learners must feel a sense of control over their own learning; and
5) instructional strategies must accommodate the cognitive and/or physiological needs of the learners.

Although the survey for this study was not able to incorporate all the above listed characteristics, motivation, self-efficacy, and experience were measured. In addition, individual interviews with a sampling of students explored their orientation for learning, the course relevancy, and their sense of control.

Learning Theory

"Cognitive psychology is a theoretical perspective that focuses on the realms of human perception, thought, and memory. It portrays learners as active processors of information" (Hofstetter, 1997), thereby allowing learners to individually respond to new information within their own context. If the teacher enables students to form a metacognitive framework upon which to base future learning, students can construct meaningful learning for themselves, a dominant characteristic of the learner-centered classroom. Given the adult learning model, the learning environment becomes more responsive to learners' needs, enhancing the education process. A major indicator of the shift in pedagogical paradigm lies in the degree of interactivity between a student and course content, student and instructor, and among students.

Because little research currently exists placing constructivist theory in an adult distance learning environment, an in-depth description could provide a basis for future study. Quality in this study is evaluated based upon constructivist precepts.

Significance

Existing research in distance education indicated the medium did not seem to significantly affect learning effectiveness, performance, achievement, grades, knowledge, or attitude (Russell, 1996). Students mastered a set of objectives equally well various environments.

However, Dede (1996) posited that a paradigm change transforming distance education into distributed education occurred with an asynchronous learning network, distributing more of the learning experience among the students, empowering students, and creating a student-centered learning environment. Because constructivism demanded a more active role from learners by asking them to critically evaluate and integrate new knowledge into past experience, an evaluation of the learning experience in different learning environments could provid a foundation for comparative themes or patterns.

This study contributes to literature on interaction in distance education based upon constructivist learning theory in an andragogical model, examining pedagogical issues specifically associated with distance learning and their impact upon stakeholders involved in educational decision making.

Purpose of the Study

This qualitative collective case study described the teaching/learning process in two graduate classes in education administration, delivered in either face-to-face or asynchronous computer mediated environments. Eleven students in each section of Finance in Postsecondary Education participated during spring semester of 1999 at a Midwestern research university in the United States. Student descriptions were gathered through a survey instrument, measuring students' self-efficacy, computer interest, motivation, along with demographics that included experience and purpose for taking the course. The study was designed to discover and categorize perceptions of participants in each environment from activities, interactions, and observations.

Research Question

The framework for this descriptive study followed the grand tour question: How did participants at a university in Midwestern United States perceive the teaching/learning process in a graduate level finance course of postsecondary education in a distributed education class and a face-to-face class?

Sub-research questions

1. What were the student descriptions in each class?
2. How did participants spend their time in the class?
3 What conditions influenced participation in the class?
4. What types of interaction occurred in the course?
5. What part did the technology play in the interactive learning process?

Research Design and Analysis

This evaluation described the same course offered in each of its formats, instructed by the same professors, using identical texts, identical readings, comparable assignments, and identical final exam. Methodology employed is shown in Table 1 below. The description of the class experience was told from multiple perspectives.

Table 1: Matrix of Data Gathered by Researcher for Analysis

Participants	Documents	Interview	Audiotape or Video	Observation
Instructors	Journal, Timelog, Grade reports, Communiqués, Syllabus, Handouts, Text	Semi-structured	Classroom (audiotape) (recorded video presentation)	
Students	Journal, Timelog, Class Evaluations, Written work	Three semi-structured from each class (purposeful sampling)	Classroom (audiotape)	
Researcher	Journal, Observation notes, interaction log			Classroom & Lotus Notes

BEST COPY AVAILABLE

Qualitative data were analyzed throughout the data collection process. Because observations and journals/timelogs preceded the interviews, the first level of analysis involved scanning the observations and journals to determine categories or themes occurring in classroom interaction. Interviews provided additional details and perspectives to the issues. An attempt was made to select students with some similar characteristics between each class mode for interviewing to provide insight to the students' descriptions and perhaps make a connection to their achievement and course delivery choice. Matching demographics met with limited success because of the variability of factors. Consequently, interviewees were chosen to represent a wide range of demographic variables, purposeful sampling. The students reported their views of their roles in the class, the interaction, and the influence of the technology.

A second level of analysis determined the critical elements and incidences of each issue's process. Textual information was fed into a qualitative data analysis computer program, NU*DIST. Repeated issues were cross referenced by both individual class section and between sections. Through these multiple sources of information, pictures of class experiences from various perspectives were created.

The initial survey was conducted to provide an extensive picture of the students in each class. A comprehensive "picture" of the uniqueness of the distance education student or the on-campus student can only be accomplished when several factors are considered in the descriptive analysis. Without consuming a large amount of time completing multiple inventories in order to record the multiple variables, a survey instrument with several short inventories was used for data gathering, along with demographic and academic background, both possible indicators of variance.

Quantitative descriptive data were gathered from the students through the survey issued at the beginning of the semester in an effort to provide a descriptive profile of each class. The survey included demographic information, including academic history and career goal. In addition, students were asked to include the grade they expected for the course and their confidence in accomplishing the work the course the required. Additional inventories in the survey registered students' concerns approaching this course, their reasons for studying, and their interest in computers. The purpose of the inventories was to fill in some of the gaps of student characteristics for the students who choose or do not choose to become distance learners. This survey was subjected to a validity check by graduate personnel, who had administered the survey in the Department of Educational Psychology. While the inventories had been consistently used for undergraduates and reliability checks run on that population, data were analyzed and compared for reliability in a graduate level class with lower ratings than for the undergraduate population in the reasons for studying scale, but within an acceptable range.

In addition to the initial survey, course evaluations and grade reports provided further description of each class and elucidated any differences between the two groups. Ten of the eleven students in the face-to-face class completed their surveys. Six of the eleven distributed students returned the initial survey. Six of the eleven face-to-face students turned in anonymous course evaluations at the end of the course. However, none of the distance education students had returned their evaluations at this report writing. Grades for all students except one in the distributed education class were recorded.

Verification Procedures

Interview and face-to-face class session tapes were transcribed by a professional transcriptionist and verified by the researcher. Major themes and patterns were coded and

6

interpreted within the given context, and participants were provided feedback upon these themes. Triangulation was used to verify multiple sources of documentation and interviews. An ongoing log of researcher's reflections and activities throughout the study process was kept. In addition, another researcher is examining the data for verification of researcher's observations, based upon text analysis of the courses. The quantitative data were examined by measurement analysts in the teachers college.

Findings

Student Descriptions

Demographics

Each of the classes had 11 students for a total of 22 students. All students could be classified as non-traditional through age classification: all were age 25 or above. The face-to-face class consisted of four females and seven males; the off-campus, or distributed students numbered three females and eight males. The face-to-face classroom included two females of ethnically diverse status (foreign students) and two males (American-born). The distributed class contained two males of ethnic minority, including one who was also deaf. However, those data are based upon the amount of information students wished to share with the class and the researcher. One of the distributed students was an American citizen living outside the U.S. All students were admitted into the education administration program at the university, specializing in educational leadership in higher education, either at the master's or doctoral level.

Experience

Although all the students returning the survey instrument indicated a career goal of either teaching or administering at the postsecondary level, current experience in postsecondary education administration varied greatly from none to twenty+ years in college administration spread throughout both classes. Only two students, one from each class, indicated experience in the area of finance. One was formerly an accountant and another included former duties as a financial aid officer. Three of the six returned surveys from the distributed students indicated past administrative experience in postsecondary work. Six of the ten students in the face-to-face class had experience in postsecondary administration. Three of the face-to-face students indicated that this class was their first education administration course. All the distributed students returning surveys had taken several education administration courses. One of the strongest indicators of success in a course can be experience. Only one student indicated prior job-related experience.

Confidence and Concerns

The distributed students expressed more confidence than the face-to-face students in their ability to achieve the tasks assigned for the course. Students were asked to rate their confidence level for achieving various assignments and activities in the course by rating their confidence on a scale of 0% for no chance of achieving any probability of success on a particular course activity to 100% certainty. This particular segment of the survey was the only part to provide a significant difference based upon a t-test for a sample $N<30$ (alpha = .024) with a reliability rating of .9215. Conversely, one might expect the face-to-face students to express more concerns about how well they might do on exams and course assignments based on responses to statements rated on a Likert scale of never to always. However, no significant difference was detected between the two groups in that .No correlation was found between those two sections as one might expect when attempting to determine students' academic self efficacy.

Motivation

Asking students about their beliefs for studying could provide possible motivations for achieving. Again students rated their reasons why they study from never to always and

responded to statements that indicated their motivation for studying was based upon principles of mastery, achievement performance, or social performance. Reliability of students' reasons for studying based upon mastery raised a standardized item alpha of .8618, based upon seven items. However, performance, either socially or achievement based, was less clearly reliable with reliability levels of .5260 and .5703 respectively, based upon seven and six items each.

Computer Interest

Because distance education students taking courses via a computer are sometimes seen as more interested in using a computer, a computer interest inventory was also included in the survey. The surveys revealed almost no difference in the constituencies taking either the face-to-face class or the distributed form. The alpha revealed a reliability rating of .9146 on an eighteen-item scale.

Achievement levels

Given that the only significant difference based upon the student factors of confidence and concerns (issues of self-efficacy), reasons for studying (motivation), and computer interest (knowledge of technology) was in the area of confidence, with the distributed students displaying a significant amount of greater confidence in achieving the course's tasks, a comparison of what students felt they were expecting to achieve at the beginning of the semester compared to their final grade at the end was undertaken. All sixteen surveys from the twenty-two possible expected to achieve a grade of A or higher. (One indicated an A+, which he later achieved.) Final course grades broke down as follows for each class and by gender:

Final grade reports

Students	A	B	Incomplete	Withdrawn	Repeat
face-to-face female	2	1		1	
face-to-face male	3	3	1		
distributed female	2	1			
distributed male	5	1	1		1

The confidence factor seemed to influence final grades with the face-to-face class earning fewer A's (5) versus the distributed class (7). However, neither class's grade expectations matched with identical earned grades. Consequently, expecting an A and having confidence that one would succeed in the course tasks were not sufficient indicators to achievement, regardless of the mode in which the class is taught.

Summary of Student Characteristics

The survey revealed that the characteristics of both classes were more alike than different. All students were of non-traditional age, the gender distribution was not significantly different, computer interest was almost identical, course concerns and social or performance achievement orientation seem to differ little impact. The strongest indicator of differences between the classes lies in the greater amount of confidence distributed students bring into the class. This factor might be considered when the class created a slight edge on the final academic grades for the course. These students expected that they would be able to perform quality work to the professors' expectations.

The Student Time Factor

Other factors outside efficacy, motivation, and performance orientation may influence the achievement of these students. Time is one such factor. For the purpose of discovering how participants spent their time with the class and completing a description of the students in these classes based upon their study habits, students were asked to keep a time log of

BEST COPY AVAILABLE

time spent on the class, including class time. After eliminating the two foreign students from the face-to-face class so that language fluency would not be as likely to influence the overall class average, five student time logs were met the researcher's criteria for expected reporting. The amount of time ranged from 3 and 3/4 hours a week to 10 (however, the 10 included a 2.5 hour commute each week), averaging 6.3 hours a week. The distributed students seemed less inclined to want to add up hours for an average, but they had built a regular routine of checking on class progress on a daily basis, usually before work, during lunch hour, and after work with reading down in late evening, including printing off others' essays, or on weekends. A rough estimate of their time would be close to 14 hours a week. If this estimate is close to accurate in this self-report, students who take a class via the computer can expect to spend more time on the computer than the on-campus student spends with reading and class time combined. Given that writing usually takes more time than speaking, judging the quality of the course based upon time spent may not be the most accurate comparison when developing a quality distance education course. Face-to-face students often restarted thoughts and spoke in fragments, seldom experienced by the distributed students.

Laughter is the best medicine

Interaction, as this researcher found, can take many forms. Only a couple of significant ones will be discussed within the context of this paper, and the researcher will focus upon the peer interaction. Upon examination of the transcript of several class discussions, a pattern of laughter emerged in the face-to-face classroom. Sometimes it was appropriate to the tone of the discussion, such as when tension was eased by referring to one of the students' place of employment in a joke, a state college that almost went under financially, an irony in this finance class because this individual worked in the business office of the college. However, the "victim" of the joke could usually throw back a caustic remark just as quickly, so laugher was a bonding point for that face-to-face class. The students used laughter as a point where the discussion either flowed more rapidly or simply switched or stalled on the chosen topic. Consequently, it could be used either positively or negatively depending upon the reaction of the class to the laughter. Regardless, it was frequent, and the remarks that initiated it came from both instructors and students.

For the distributed class students, laughter is less likely to be heard. If it is used it becomes more like a chuckle, a smile created on the computer screen message board. One of the limitations of the computer screen is the lack of inflection which is so necessary to understanding humor in context. Otherwise we depend upon visual humor, which again is limited to graphics and not as easily with text. However, even with those limitations and the possibility of being misunderstood, a remark would still be attempted. "Thanks for the info. With all that free money around it makes me almost want to do it all over again.....almost." Unfortunately, this attempt at humor garnered no response.

Social interaction, not thoughts

Students in the face-to-face class and the Lotus Notes classroom readily admitted that the class usually meant as much to them as they put in it. Students who did not interact frequently within the class framework week after week admitted they did not consider the class their strength and only took it because it was core class in their program. On frequent occasions, students within the face-to-face classroom would begin a thought, stop, switch in midsentence and then repeat before an idea was completed. However, they perceived the class interaction as satisfying. In the course evaluation, the on-campus class students rated the value of the class slightly above average (3.5 of 5). They rated their participation in class discussion at 4.67 (of 5) and quality of the class discussion 5.33 (of 6). Although not rated exceptional, students rated the information and interactions in class held their attention

an average of 4.17 (of 6), or often to very often. From behaviors and remarks throughout the semester, the social interaction was just as important as the content knowledge gained.

At this time, no class evaluations have been returned from the distributed students, but from their interview samples, the social interaction that occurred or did not occur in the cafeteria or the class meeting influenced the enthusiasm for learning a potentially dry subject, especially when, as one participant stated. that she enjoyed people more than numbers. Another said that the learning experience was just as important if not more than the knowledge gained. If she just wanted the knowledge, she could read. However, because she emphasized "quality" in her responses, she was particular about to whom and how often she responded. For her, the quantity did not replace the quality of discussion in a class meeting on-line.

Technology and what technology

When students from the face-to-face class were asked during their interview about their use of technology in the class, the immediate reaction was what technology? Even though they accessed the library electronically for their research, used Powerpoint presentation software for group projects, and attended a class being videotaped in a distance education classroom, they still paused when approached with that question. Perhaps the use of technology had become so transparent that they had not noticed its entrance into the traditional classroom.

On the other hand, the distributed students were quick to point out that without technology they would not be able to take the class in its current form. "I'm in awe" of the technology that makes taking a class with an individual across the Pacific possible was the way one student expressed the experience, even though she lived within the community and could have taken the course on campus. However, after taking several courses via the same mode, distributed students too began to focus more on the content rather than the means to the content. The "addiction" to the Lotus Notes that these junkies admit lies not in the technology but in the possibility of interaction with other students. The class is replicated a couple times a day, so that students will not miss a key message.

Conclusions

Major themes emphasized in this collective case study included: descriptions of the students in each mode, students' perspectives of the technology used in the classroom experience, and perceptions of the kinds of interactions occurring in both distance and face-to-face modes.

Students' beliefs in the quality of distance education may guide their perceptions of the best learning environment, regardless of their experience, self-efficacy, and other characteristics. Characteristics of graduate students, on campus or off, are more alike than different when measurements such as age, gender distribution, ethnicity, motivation for learning, course concerns, and computer interest are measured. The most significant difference between the two groups lies in the confidence factor. Distance learners are more confident in their academic ability to achieve in the course than their campus counterparts.

Distributed students spend more time in class than the students who enter a classroom once a week. As experienced distance learners, they work the class into their daily routine, working before and after a full day's work and through lunch hours with scraps of time grabbed at bedtime or on weekends for reading.

All three elements of Moore's definition of interaction by the distance education student , with content, with students, and with instructor, were mentioned by students and observed. The class requirements for both classes made interaction essential to a student's final grade, creating an environment that enhanced the opportunity. However, interaction was moved beyond what each interaction could do individually to creating a sense of a learning environment when all three moved together in harmony. The students recognized that interaction was an integral part of their learning process. Distributed students developed rapport with other students on the written page, replacing the humor and body language that the face-to-face students enjoyed and used to establish their sense of community. Thus the class, in both forms, met a psychological need of the graduate students as well as the cognitive demand for instruction. As adult learners, who approached the class thoughtfully, reasoned their way through its requirements and applied their learning to real-life situations, both classes were motivated to work through the interaction processes.

While technology is considered essential to the transmission of interaction for distributed students and nonexistent for face-to-face students, students tend to consider interaction, especially with other people, as the key to a good learning experience. The immediacy of the discussion is a priority for the face-to-face students. On the other hand, distance education students indicate a higher quality of interaction among students within the Lotus Notes environment because their remarks are fewer but more content oriented and carrying complete thoughts. In the end, students choose the environment where they feel comfortable interacting and learning, not because of computer interest or reasons for studying or any number of demographic features. Students judge a class by the quality of its interaction, regardless of mode. Each group judged its mode of delivery positively.

Future Directions

I am currently analyzing the instructors' roles in the interaction process and will be analyzing the various levels of critical thinking in class discussions in both environments. Considering the role of interaction in computer mediated discussion will assist educators and students when evaluating a curriculum, regardless of class location and mode of interaction, synchronous or asynchronous.

References

Busby, N. C. (September, 1997). Formative evaluation of a sample video program from the Nutrition Pathways telecourse based on adult education principles. DEOS News 7(8) [DEOSNEWS@LISTS.PSU.EDU]. University Park, PA: Penn State University.

Dede, C. (January 1996). Emerging technologies and distributed learning. The American Journal of Distance Education, 10(2) 4-36.

Harasim, L. M. (1989). Online education: A new domain. In Robin Mason and Anthony Kaye (eds.) Mindweave: Communication, Computers and Distance Education. Oxford: Pergamon, pp. 50-62.

Hofstetter, F. T. (1997). Multimedia Literacy. New York: McGraw-Hill. (Excerpt on network [http://www.udel.edu/fth/pbs/webmodel.htm]).

Knowles, M. S. (1980). The modern practice of adult education: From pedagogy to andragogy. New York: Association Press.

Knowles, M. S. (1990). The adult learner: A neglected species. New York: Association Press.

Moore, M. G. & Kearsley, G. (1996). Distance education: A systems view. Belmont, CA: Wadsworth Publishing Company.

Peters, O. (1983). Distance teaching and industrial production: A comparative interpretation in outline. In D. Sewart, D. Keegan, & B. Holmberg (Eds.) Distance Education: International Perspectives. London: Croom Helm.

Russell, T. L. (Ed.), (1996). The "No Significant Difference Phenomenon." [http://tenb.mta.ca/phenom/phenom.html]